TRANE®

Cooling and Heating Systems and Services

Air-Cooled Series R® Helical-rotary Chiller

Model RTAD 85-100-115-125-145-150-165-180
250 to 650 kW (50 Hz)

Built For the Industrial and Commercial Markets

RLC-PRC015-E4

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General Data

SI Units

Table G-1 - General Data RTAD Standard

Size		85	100	115	125	145	150	165	180
Cooling capacity (5) (6)	kW	275.0	335.8	392.0	447.2	516.9	552.7	602.6	647.3
Power input (7)	kW	99.7	129.2	149.1	187.4	191.1	210.4	223.1	243.5
Energy Efficiency Ratio (5) (6) (as Eurovent)	kW/kW	2.76	2.60	2.63	2.39	2.71	2.63	2.70	2.66
ESEER (as Eurovent)	kW/kW	3.49	3.32	3.41	3.21	3.51	3.33	3.40	3.27
IPLV (According to ARI conditions 44°F leaving water temperature, 95°C entering air temperature)	kW/kW	3.94	3.72	3.86	3.67	3.94	3.75	3.77	3.68
Compressor									
Quantity		2	2	2	2	2	2	2	2
Nominal Size (1)	tons	40/40	50/50	60/60	70/70	85/70	85/85	100/85	100/100
Evaporator									
Evaporator Model		EG120	EG140	EG170	EG200	EG200	EG200	EG250	EG250
Water Storage	l	106	270	222	204	204	204	415	415
Minimum Flow	l/s	4.1	6.0	7.3	8.8	8.8	8.8	11.6	11.6
Maximum Flow	l/s	17.3	20.8	24.6	30.7	30.7	30.7	38.0	38.0
Condenser									
Qty of Coils		2	2	2	2	2	2	2	2
Coil Length	mm	2743	3658	3658	3658	4572	4572	5486	5486
Coil Height	mm	1626	1626	1626	1626	1626	1626	1626	1626
Fin series	fins/ft	192	192	192	192	192	192	192	192
Number of Rows		3/3	2/2	3/3	3/3	3/3	3/3	3/3	3/3
Condenser Fans									
Quantity (1)		3/3	3/3	3/3	3/3	5/4	5/5	6/5	6/6
Diameter	mm	762	762	762	762	762	762	762	762
Total Air Flow	m^3/s	23.52	28.09	26.71	26.73	36.99	39.24	44.89	47.08
Nominal RPM		915	915	915	915	915	915	915	915
Tip Speed	m/s	37.1	37.1	37.1	37.1	37.1	37.1	37.1	37.1
Motor kW	kW	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
Minimum Starting/Oper Ambient(2)									
Standard Unit	°C	0	0	0	0	0	0	0	0
Low Ambient Unit	°C	-18	-18	-18	-18	-18	-18	-18	-18
General Unit									
Refrigerant		HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a	HFC 134a
No. Of independent Refrigerant Circuits		2	2	2	2	2	2	2	2
% Minimum. Load (3)		17	17	17	17	17	17	17	17
Operating Weight (4)	kg	2760	3205	3655	3670	4260	4520	5440	5525
Shipping Weight (4)	kg	2660	2940	3440	3470	4060	4320	5030	5115

Notes:

(1) Data containing information on two circuits shown as follows: ckt1/ckt2

(2) Minimum start-up/operation ambient based on a 2.22 m/s (5mph) wind across the condenser.

(3) Percent minimum load is for total machine at 10°C (50°F) ambient and 7°C (44°F) leaving chilled water temperature, not each individual circuit.

(4) With aluminium fins.

(5) At Eurovent conditions, 7°C leaving water temperature and 35°C entering condenser air temperature.

(6) Ratings based on sea level altitude and evaporator fouling factor or 0.017615 m^2°K/kW

(7) Unit kW input, including fans

Controls

Chiller Unit Controls

Trouble-Free Installation, Start-Up and Operation

Adaptive Control means the Unit Control Module (UCM-CLD) directly senses the control variables that govern operation of the chiller: motor current draw, evaporator temperature, condenser temperature, etc. When any of the variables approaches a limit condition where the unit may be damaged or shut down on a safety, the UCM takes corrective action to avoid shutdown and keep the chiller operating. It does this through combined actions of compressor slide valve modulation, electronic expansion valve modulation and fan staging.

Additionally, the UCM optimizes total unit power consumption during normal operating conditions. No other chiller control system in the marketplace duplicates this performance.

Safety Controls

A centralized microcomputer offers a higher level of machine protection. Since the safety controls are smarter,

they limit compressor operation to avoid compressor or evaporator failures, thereby minimizing nuisance shutdown. During abnormal operating conditions, the UCM will continue to optimize chiller performance by taking the corrective action necessary to avoid shutdown.

This keeps cooling capacity available until the problem can be solved. Whenever possible, the chiller is allowed to perform its function; make chilled water. In addition, microcomputer controls allow for more types of protection such as over and under voltage! Overall, the safety controls help keep the building running and out of trouble.

The End Of Nuisance Trip-Outs And Unnecessary Service Calls

Unnecessary service calls and unhappy tenants are avoided. The unit does not nuisance trip or unnecessarily shut down. Only when the UCM has exhausted the corrective actions it can take and the unit is still violating an operating limit will the unit shut down. CONTROLS ON OTHER CHILLERS TYPICALLY SHUT DOWN THE CHILLER, QUITE PROBABLY JUST WHEN IT IS NEEDED THE MOST.

For example:

A typical five-year-old chiller with dirty coils might trip-out on high pressure cutout on a 38°C day in August. A hot day is just when comfort cooling is needed the most. In contrast, the air-cooled Series R chiller with an Adaptive Control microprocessor will stage fans on, modulate electronic expansion valve, and modulate slide valve as it approaches a high pressure cutout. Thereby KEEPING THE CHILLER ON-LINE JUST WHEN YOU NEED IT THE MOST.

Figure 13 - Unit control module with Clear Language Display Keypad (UCM-CLD)

Generic Building Automation System Controls

Simple Interface With Other Control Systems

Microcomputer controls afford simple interface with other control systems, such as time clocks, building automation systems and ice storage systems. Wiring to the unit can be as simple as two wires! This means you can have the flexibility to meet job requirements while not having to learn a complicated control system.

Notes

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Quality Management System Approval

Literature Order Number	RLC-PRC015-E4
Date	1108
Supersedes	RLC-PRC015-E4_0903

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this publication.

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